than the lower control limit (LCL$_1$), the basic model is in compliance and testing is at an end.

(ii) If the value of n is greater than n$_1$, the basic model is in non-compliance. The size of a second sample n$_2$ is determined to be the smallest integer equal to or greater than the difference n−n$_1$. If the value of n$_2$ so calculated is greater than 20−n$_1$, set n$_2$ equal to 20−n$_1$.

Step 8. Compute the combined mean ($\bar{X}_2$) of the measured energy performance of the n$_1$ and n$_2$ units of the combined first and second samples as follows:

$$\overline{X}_2 = \frac{1}{n_1 + n_2} \sum_{i=1}^{n_1 + n_2} X_i \qquad (6)$$

Step 9. Compute the standard error (SE($\bar{X}_2$)) of the mean full-load efficiency of the n$_1$ and n$_2$ units in the combined first and second samples as follows:

$$SE\left(\overline{X}_2\right) = \frac{S_1}{\sqrt{n_1 + n_2}} \qquad (7)$$

(Note that S$_1$ is the value obtained above in Step 3.)

Step 10. Set the lower control limit (LCL$_2$) to,

$$LCL_2 = RE - tSE\left(\overline{X}_2\right) \qquad (8)$$

where t has the value obtained in Step 5, and compare the combined sample mean ($\bar{X}_2$) to the lower control limit (LCL$_2$) to find one of the following:

(i) If the mean of the combined sample ($\bar{X}_2$) is less than the lower control limit (LCL$_2$), the basic model is in non-compliance and testing is at an end.

(ii) If the mean of the combined sample ($\bar{X}_2$) is equal to or greater than the lower control limit (LCL$_2$), the basic model is in compliance and testing is at an end.

MANUFACTURER-OPTION TESTING

If a determination of non-compliance is made in Steps 6, 7 or 10, above, the manufacturer may request that additional testing be conducted, in accordance with the following procedures.

Step A. The manufacturer requests that an additional number, n$_3$, of units be tested, with n$_3$ chosen such that n$_1$ + n$_2$ + n$_3$ does not exceed 20.

Step B. Compute the mean full-load efficiency, standard error, and lower control limit of the new combined sample in accordance with the procedures prescribed in Steps 8, 9, and 10, above.

Step C. Compare the mean performance of the new combined sample to the lower control limit (LCL$_2$) to determine one of the following:

(a) If the new combined sample mean is equal to or greater than the lower control limit, the basic model is in compliance and testing is at an end.

(b) If the new combined sample mean is less than the lower control limit and the value of n$_1$ + n$_2$ + n$_3$ is less than 20, the manufacturer may request that additional units be tested. The total of all units tested may not exceed 20. Steps A, B, and C are then repeated.

(c) Otherwise, the basic model is determined to be in non-compliance.

Subpart Q—Amended Energy Conservation Standards for Certain Commercial Equipment, and Effective Dates

SOURCE: 66 FR 3354, Jan. 12, 2001, unless otherwise noted.

§ 431.701　Purpose and scope.

This subpart sets forth the minimum efficiency levels for commercial equipment, contained in ASHRAE/IES Standard 90.1–1999, that the Department of Energy has adopted as national standards, effective in 2003 or 2004 as specified in §§ 431.701 through 431.704. On their effective dates, these levels will amend and replace some of the efficiency levels required for certain commercial equipment by Section 342(a) of EPCA. The Department has not adopted the efficiency levels specified in ASHRAE/IES Standard 90.1–1999 for products not identified in this subpart, and the levels specified in Section 342(a) of EPCA for those products will remain in force unless and until they are amended. The Department adopted the efficiency levels in this subpart pursuant to Section 342(a)(6) of EPCA, which addresses the establishment of national standards at minimum levels specified in amendments to ASHRAE/IES Standard 90.1, in place of the efficiency levels required in Section 342(a) of EPCA.

§ 431.702　Commercial warm air furnaces.

Each commercial warm air furnace manufactured after October 29, 2003 must meet the following energy efficiency standard levels:

(a) For a gas-fired commercial warm air furnace with capacity of 225,000 Btu per hour or more, the thermal efficiency at the maximum rated capacity must be not less than 80 percent.

(b) For an oil-fired commercial warm air furnace with capacity of 225,000 Btu per hour or more, the thermal efficiency at the maximum rated capacity must be not less than 81 percent.

§431.703 Small and large commercial package air conditioning and heating equipment.

Each commercial water- or evaporatively-cooled air conditioner and water-source heat pump manufactured after October 29, 2003 (except for large commercial package air-conditioning and heating equipment, for which the effective date is October 29, 2004) must meet the applicable minimum energy efficiency standard level(s) for heating and cooling set forth in Tables 1 and 2 of this section.